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Umpqua National Forest Forest-wide Travel Analysis Report

Umpqua National Forest
Roseburg, Oregon

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Introduction and Background

On March 29, 2012, the US Forest Service, Washington Office (WO) directed Regional Foresters to complete a science-based analysis of all National Forest System (NFS) roads by the end of FY15. This Travel Analysis must be documented in a travel analysis report, and is an important first step in meeting those sections of Subpart A of the 2005 Travel Management Rule that require each National Forest to:

- Identify the minimum road system needed for safe and efficient travel and for the protection, management, and use of NFS lands
- Identify roads that are no longer needed to meet forest resource management objectives and which therefore should be scheduled for decommissioning or considered for other uses

By completing this work, the FS expects to identify opportunities for making changes toward a more appropriately-sized and environmentally-sustainable transportation system that is responsive to ecological, economic, and social concerns. The WO stated that the NFS road system of the future must continue to provide needed access for recreation and resource management, as well as support watershed restoration and resource protection to sustain healthy ecosystems.

Travel analysis is not a decision-making process; it is an assessment of the existing condition of the current road system. It will be used to inform future decisions relating to administration of the forest transportation system and helps to identify proposals for changes to travel management direction (FSM 7712). Specifically, once travel analysis is completed, it will be used to:

- Inform future plan and project level proposed actions, purpose and need statements, and future decisions pertaining to road construction, reconstruction, decommissioning, and maintenance
- Inform road investments at multiple scales
- Inform delivery of restoration programs for multiple resources
- Inform agency strategies to comply with regulatory requirements, including those associated with the Clean Water Act and the Endangered Species Act

Summary of Issues

Issues were identified using previous and ongoing public engagement and internal Forest Service input. This is discussed in more detail in step 1 of the process below. Key issues covered in this analysis can be categorized in the following areas:

- Access to administrative sites and facilities
- Fire and fuels management
- Vegetation management and forest management products
- Heritage resources
- Public access to recreation sites and recreational activities on the Forest Service
- Access to privately owned lands and authorized uses such as utility corridors, mining claims, grazing allotments, summer homes, and commercial communication sites
- Connectivity for motorized travel across and within the Forest
- Wildlife populations and habitat
- Water quality, riparian and aquatic habitat
- Unique habitats

These issues and the process to quantify them are addressed fully in steps 3 and 4 of this report.

Key Results, Findings and How the Report Will Be Used

Achieving a road management strategy that balances available funding with maintenance costs for a sustainable road system that provides adequate access and reduced resource risks will not be achieved in the short term. It will require a time period of several decades. Solid steps in the right direction can be made incrementally over time using recommendations in this document to inform future project planning on the Umpqua National Forest.

This report is a starting point to identify road segments for potential modification after further site specific review. Physical changes and potential road closures will be implemented after site specific planning and review of the roads and resources in the field and with public engagement in the planning process. Recommendations in this report to reduce risk and financial cost of maintenance should be incorporated in projects when it is feasible and appropriate.

Access to National Forest lands is important and will continue to be a compelling consideration in balancing road related environmental risk with the social and economic benefits of a well-developed transportation system. Decision makers will continue to be tasked with making the right choice to balance competing factors for the best interest of the public and the resources.

What the Analysis Does Not Do

- This analysis does not make site-specific decisions about which roads will be retained, decommissioned or closed. Those decisions are made at the project scale with public input on site-specific situations.
- This analysis is not a decision document. Recommendations and findings will only be used to inform decisions at higher or lower scales. They are not standards or guidelines under the Umpqua National Forest Plan. Recommendations and findings are subject to change as new or better information becomes available.
- This analysis does not provide site-specific information at a detailed enough scale to preclude the need for more thorough and detailed information to develop specific proposed actions or decisions regarding road reconstruction, inactivation, or decommissioning.
- This analysis does not affect the 2015 Umpqua National Forest Travel Management Plan and Forest Plan Amendment decision which designates roads, trails and areas for motorized travel on the Umpqua National Forest. The Motor Vehicle Use Map (MVUM), planned for publication in late 2015, will implement the Umpqua National Forest Travel Management Plan and Forest Plan Amendment.

Step 1: Setting up the Analysis

Project Area and Objectives

The scale for this travel analysis process (TAP) is the transportation system of motorized roads within the Umpqua National Forest, and those roads outside the Forest boundary but under Forest Service jurisdiction. Maps of the Umpqua National Forest road system are included in Appendix A. The objective of the analysis is to evaluate scientific information in order to inform a road management strategy that is responsive to public access needs, serves the access needs for resource management activities, has minimal negative ecological effects on the land, and is in balance with available funding. The Forest road management strategy conforms to the 1990 Umpqua National Forest Land and Resource Management Plan (LRMP) as amended by the 1994 Record of Decision for

Amendments to the Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl (NWFP), and is consistent with applicable federal and state regulations.

The TAP is a broad scale comprehensive look at the transportation network. Specific objectives of the TAP are to:

- Make recommendations that balance the need for access while minimizing risks by examining important ecological, social, and economic issues related to roads and trails
- Develop maps, tables, and narratives that display transportation management opportunities and strategies to address access needs and environmental concerns
- Compare the current road system to the desired condition to identify opportunities for change
- Make recommendations to inform future travel management decisions under National Environment Policy Act (NEPA) decisions to get to a right-sized, safe efficient road system needed for the administration, utilization, and protection of NFS lands on the Umpqua as described in 36 CFR 212.5(b)(1)
- Identify roads that are likely not needed to meet forest resource management objectives as described in 36 CFR 212.5(b)(2)

Interdisciplinary Team

An interdisciplinary core team of specialists was assigned to the TAP. The team members and their primary analysis roles are listed below. Numerous other individuals assisted with data compilation and analysis.

Miles Barkhurst, Transportation Engineer: team leader, transportation systems, economics

Cheryl Caplan, Public Affairs Officer: public engagement, communications

Gabe Dumm, Fuels Specialist: fire and fuels management

Mike Harris, Vegetation Program Manager: forest management products

Richard Helliwell, Botanist: unique habitats, weed management

Tedd Huffman, Hydrologist: stream crossings, riparian habitat

Chris Kelly, Archaeologist: heritage resources

Steve Marchi, RELMH staff officer: recreation, public access, special uses, minerals

Greg Orton, Soil Scientist: sediment from roads, stream crossings

Vern Shumway, Recreation/Lands/Minerals Program Manager: recreation, public access, special uses, minerals

Jason Wilcox, Fisheries Biologist: stream crossings, riparian habitat

Tiffany Young, Wildlife Biologist: wildlife and late successional reserves

Process Plan

The TAP followed the process described in Forest Service Manual 7712 (7700-2009-2) and Forest Service Handbook 7709.55, Chapter 20 (7709.55-2009-2). This is the same process used for prior roads analyses guided by the publication FS-643, Roads Analysis: Informing Decisions about Managing the National Forest Transportation System (USDA Forest Service 1999). The process includes the following 6-steps: 1) setting up the analysis; 2) describing the situation; 3) identifying issues; 4) assessing benefits, problems, and risks; 5) describing opportunities and setting priorities; and 6) reporting.

The interdisciplinary team first met in May 2014 to review regional and forest-level guidance, discuss relevant existing information, identify additional information needs, set tasks, and establish a process schedule for completion in spring 2015. Due to limited time and funding the process generally uses existing data and modeling tools. The TAP considers access needs, environmental risks, and financial considerations. A forest-level process to refine these issues was outlined to assess individual road segments by utilizing separate beneficial use and environmental risk factors. Financial information was compiled to compare historical costs of maintaining roads to anticipated funding levels. These issues are described and analyzed in steps 3 and 4 of the TAP to provide integrated information for step 5, identification of opportunities and priorities for making changes toward a more appropriately sized and environmentally sustainable transportation system that is responsive to ecological, economic, and social concerns.

Substantial public input was received during planning for implementation of Subpart B of the 2005 Travel Management Rule that was also incorporated into the TAP. Implementation of the Subpart B process is nearing completion for the Umpqua National Forest with a signed decision notice and publishing of a Motor Vehicle User Map (MVUM) expected in late 2015. The public input gained was used in development of the risk and benefits information in this report. It helped to identify the routes and areas that are important for public access. Open houses were held in December 2014. Draft Subpart A maps displaying initial data were available to inform the public about the development of this report, including initial risk and beneficial use assessments for sample road segments. Questions regarding the TAP were answered along with helpful exchange of information at the open houses.

The TAP report will be available online at the Umpqua National Forest website. Additional public comments will be used to inform future project level planning efforts. Comments will be received regarding this TAP for a period of not less than 90 days from the date of the posting on the Forest website. These comments will be used in aggregate when developing future site specific projects that this report is to inform. This report is intended to be dynamic and will be revisited when there are opportunities to significantly improve the results of this analysis at the forest scale. When and if this report is updated it will again be available for public review and comment.

Step 2: Describing the Situation

Existing Road System

National Forest System (NFS) roads are categorized by assigned maintenance levels (ML) 1 through 5, in accordance with road management objectives identified and documented for each road. ML 1 roads are in storage for periods exceeding one year between intermittent uses. They are typically closed at the entrance with physical barriers to restrict traffic and some are under legal closure to motorized traffic. They are opened for short term use by specific land management activities, generally not available for public use during that activity, and are closed again following use. ML 2 roads are open for use by high clearance vehicles, while user comfort and convenience are not considerations for low clearance vehicles (passenger cars). Use by low clearance vehicles is discouraged by signing and/or other physical indicators at the entrance. Some ML 2 roads are managed for administrative use only, may be closed with gates to eliminate other traffic, and may be under legal closure orders to prohibit other traffic. ML 3 roads are maintained for use by standard passenger cars, though user comfort and convenience are not considered priorities. ML 4 roads are maintained to provide a moderate degree of user comfort and convenience for passenger cars. They are typically paved single or double lane roads, though some are aggregate surfaced. ML 5 roads are

maintained to provide a high degree of user comfort and convenience for passenger cars, and are typically paved double lane.

ML 3, 4 and 5 roads are subject to management in accordance with the Highway Safety Act of 1966 (P.L. 89-564). Forest Service budget direction places higher priority on managing and maintaining these roads for safe public use than on ML 2 roads.

There are approximately 4706 miles of NFS roads managed by the Umpqua National Forest. Table 1 displays a breakdown of road mileage by maintenance level, number of lanes and surface type.

The approximate 514 miles of ML 3, 4, and 5 roads are considered to be the "primary" road system and are highest priority for routine, annual maintenance. Of the approximate 3300 miles of ML 2 roads, a higher priority is placed on approximately 1043 miles considered to be "secondary" roads, which together with the primary roads, form the "key road system" (Umpqua Roads Analysis Report, 2003). Secondary roads receive maintenance as budget and scheduling allow, but are not maintained on an annual basis, and may be inaccessible from blow down and slides for extended periods of time. The remaining approximate 2257 miles of ML 2 roads receive very limited routine maintenance, but are maintained in conjunction with and at the time of specific land management project access needs and are more likely to be inaccessible from blow down and slides for extended periods of time. The approximate 892 miles of ML 1 road only receive maintenance during intermittent uses for projects during specific land management project activities, sometimes more than twenty years apart.

As per the Draft Decision Notice for the 2015 Umpqua National Forest MVUM, 515 miles of ML 1 roads are to be collocated with motorized trails. Approximately 430 miles of trail will be designated for use by vehicles 50 inches or less in width and another 85 miles of trail is to be designated for use by all vehicle classes.

Motorized mixed use occurs when an NFS road has been designated for use by both highway-legal and non-highway-legal motor vehicles. Motorized mixed use occurs on a total of approximately 3406 miles of ML 2, 3, and 4 roads. The majority of mixed use (approximately 3256 miles) occurs on ML 2 roads.

Approximately 174 miles of NFS roads are located on private lands, within and outside of the National Forest boundaries, and are under federal jurisdiction by virtue of acquired right of way easements and public access is controlled by the Forest Service.

In addition to the approximate 4706 miles of NFS roads, about 30 miles of road located on private land within or near the boundaries of the Umpqua National Forest, but without federally acquired right-of-way, are included in the analysis to assess the potential opportunities for needed right-of-way acquisition or transfer of property. Some of these roads access NFS roads that have no other public or administrative access. There are approximately 17 miles of NFS road for which there is no federal or other public agency jurisdiction on the other roads needed to access or utilize them. These are locations where roads located on privately owned lands and without federal jurisdiction, extend onto Forest Service lands or meander on and off of Forest Service Lands. Most of these isolated NFS roads were constructed and used to harvest and haul timber from Forest Service lands, but permanent federal right-of-way was not acquired for the private roads accessing them. Other roads located on private land within National Forest boundaries, without federal right-of-way, were excluded from analysis after initial map location assessment indicated no potential beneficial need for accessing National Forest Lands.

Table 1 – Umpqua National Forest System Roads

(approximate mileages)

ML	ATM Strategy	ML Miles	Mileage Breakdown	Lanes	Surface Type	Motorized Mixed Use Mileage	Collocated Motorized Trail Mileage
5	Primary	41	1	1	Aggregate	0	0
			2		Asphalt	0	0
			38	2	Asphalt	0	0
4	Primary	131	10	1	Aggregate	1	0
			52		Asphalt	< 1	0
			12	2	Aggregate	4	0
			57		Asphalt	< 1	0
3	Primary	342	3	1	Native	0	0
			315		Aggregate	141	0
			20		Asphalt	3	0
			1	2	Aggregate	0	0
			3		Asphalt	0	0
2	Secondary	1043	30	1	Native	30	0
			7		Improved	7	0
			979		Aggregate	977	0
			21		Asphalt	6	0
			2	2	Aggregate	2	0
			4		Asphalt	0	0
	Other	2257	354	1	Native	339	0
			74		Improved	73	0
			1828		Aggregate	1821	0
			0.4		Asphalt	< 1	0
			1.0	2	Asphalt	1	0
1	Other	890	738	1	Native	0	430
			10		Improved	0	4
			142		Aggregate	0	79
		2	2	2	Asphalt	0	2
Approximate Total Miles:		4706				3406	515

There are approximately 130 miles of road within the Umpqua National Forest that are managed by other government agencies (state, county, Bureau of Land Management) or by neighboring national forests. These are not included in the analysis.

There are roads on Umpqua National Forest lands that are not included in the NFS system. Timber sale activity areas have temporary roads constructed for use during operations, then are closed and treated afterwards to restore natural drainage and vegetation. There are also "unauthorized" roads which receive use, but are not included in the NFS system. These roads have not been comprehensively mapped. Use of these roads by the public will become illegal without a special authorization when the Umpqua National Forest MVUM is published later this year. Some unauthorized roads are old timber sale roads that were neither treated as temporary roads nor documented as part of the system. Some unauthorized roads on National Forest lands access private lands or unpatented mining claims. The scope and timeline for the TAP, with limited funding, did not allow for mapping and field inventory of unauthorized roads. Temporary timber sale roads and unauthorized roads are not included in this report, but will be considered at in each project level document that this report informs. It is the intention of the Forest Service to prevent the proliferation of unauthorized routes and eliminate routes that are located in areas of the Forest that are closed to motorized traffic. These unmapped routes as inventoried during project level work will need to be evaluated for their utility for resource management needs, recreation and access to permitted activities on the Forest. If they are found to have utility the appropriate process will be used to authorize these routes, otherwise they will likely be eliminated by a variety of ways including natural revegetation or implemented restoration projects over time.

Most roads on the Umpqua National Forest were constructed prior to 1990 with recorded approximate construction dates going back to 1925. Approximately seventy-five percent of the roads were built within the period of 1951 to 1980. Some older roads have been substantially reconstructed during this time period. Many bridges, culverts, retaining structures, and embankments were constructed during this time with buried slash, stumps or logs. This organic matter is now breaking down and compressing in volume. This is leading to surface damage on the roadways that overlay this buried debris. Many of the roadway structures are nearing the end of their design life. Each year a number of these roads need repair and capital improvements to maintain the historic access and service level they have provided. This exceeds the funding available and many are not able to support the desired access they were designed for.

Road Maintenance Costs and Funding

Road maintenance is accomplished on the Umpqua National Forest by a combination of force account road maintenance crew work, road maintenance contracts, work performed by private entities under road use authorizations or right of way agreements, and work required as part of timber sale contract operations. Over the last seven years, an average of 910 miles of road maintenance is accomplished by these various means, approximately one-half of that typically on primary roads (ML 3, 4, 5). Not all types of maintenance are done on one road at the same time, and the mix of work may vary from year to year. Some years may require disproportionate amounts of removal of blow down trees or landslides, with less drainage and road surface maintenance occurring in those years. Most drainage and surface maintenance on ML 1 and 2 roads is accomplished with timber sales and by private entities.

Table 2 displays average annual maintenance costs for different categories of roads. These costs are based on the current forest road maintenance appraisal guide and represent what would need to be expended to perform the full suite of routine annual maintenance items associated with each category. Not all roads are continuously maintained to full standards. As previously described, primary roads

are highest priority for maintenance within a limited budget. The approximate annual cost to perform routine maintenance on all roads of the existing system would be approximately $4,764,000.

Table 2 – Average Annual Road Maintenance Costs
(Approximate mileages)

Maintenance Level	Road Maintenance Category	$/mi	Miles	Total
5	Primary – Double Lane Asphalt	$6,025	38	$228,942
	Primary – Single Lane Asphalt	$4,418	2	$8,836
	Primary - Aggregate	$5,201	1	$5,201
ML 5 Subtotal:			***41***	***$242,978***
4	Primary – Double Lane Asphalt	$6,025	57	$343,413
	Primary – Single Lane Asphalt	$4,418	52	$229,731
	Primary - Aggregate	$5,201	22	$114,419
ML 4 Subtotal:			***131***	***$687,563***
3	Primary – Double Lane Asphalt	$6,025	3	$18,074
	Primary – Single Lane Asphalt	$4,418	20	$88,358
	Primary - Aggregate & Native	$2,401	319	$765,888
ML 3 Subtotal:			***342***	***$872,320***
2	Secondary – All Surface Types	$1,294	1,043	$1,349,416
	Other Roads	$714	2,257	$1,610,797
ML 2 Subtotal:			***3,300***	***$2,960,213***
1	Other Roads	$1	892	$738
ML 1 Subtotal:			***892***	***$738***
	Totals:		**4,706**	**$4,763,812**

In the last few years the Umpqua National Forest has received an annual average of approximately $785,000 of congressionally authorized funding for road and bridge maintenance. An additional average of $335,000 is collected from commercial haul use of roads, including log haul from timber sales. These collections are used to supplement funding of general maintenance on primary roads and to replace worn road surfacing materials on primary and secondary roads. About 75 percent of the collections are for surfacing replacement. Costs for road maintenance performed by timber sale operators are generally borne by the timber sale purchasers and thereby are indirectly covered by the sale of the timber. The average annual value of road maintenance accomplished by timber sale operations is approximately $150,000. An additional, approximate $50,000 of work is accomplished annually by private entities with right of way or other road use agreements. The combined annual value of authorized funding, collections from commercial haul, timber sale road maintenance, and maintenance by private entities is $1,320,000. This is twenty-nine percent of the total funding value needed to maintain all roads to full standard, leaving a short fall of $3,444,000. Long term (twenty-year) congressionally authorized funding and commercial use collections are expected to remain relatively the same to current levels, though no funding levels are certain.

Title II of the Secure Rural Schools and Community Self-Determination Act of 2000 and subsequent reauthorizations provided additional funding for road maintenance on the Umpqua National Forest from 2002 to 2014. An average of approximately $340,000 per year during this period was utilized for drainage maintenance, brushing, rock crushing, surface maintenance, slide removal, danger tree treatment and storm damage repairs, mostly on ML 2 roads. The Act has again been reauthorized in

2015, and some road maintenance funding may be available for use in 2017. This Title II funding has provided for substantial continued maintenance on ML 2 roads, but future funding is uncertain. Without this or similar funding for road maintenance, approximately 100 fewer miles of road will be maintained to standard.

Table 2 represents costs for routine maintenance and does not include costs for deferred maintenance work such as replacement of corroded and deteriorating culverts, pavement reconstruction or overlays, bridge reconstruction or replacements, or repair of major damage from landslides, fire, and culvert washouts at stream crossings. As more of these types of deferred needs are not met, more roads will become inaccessible or will need to be closed for safety concerns. Costs for these recurring needs are substantial, and only limited needs are met. Funding for some of this work comes from various sources, including the Federal Highway Administration for certain qualifying damage resulting from major storm events. Some watershed restorative projects, such as replacing old culverts at stream crossings with new structures providing for aquatic organism passage, are jointly funded with external partners. Nonetheless, major deferred maintenance needs accumulate and grow. A substantial amount of asphalt roads are in advanced stages of deterioration, such that normal surface restoration treatments are inadequate, and the pavement either needs to be replaced or simply removed to leave an aggregate surface road. Many stream crossing culverts remain in place from fifty or more years and will need replacement in the next two decades. A few culverts each year have failed or have been found in deteriorated condition, some have been replaced while others have not and will likely result in new road closures for public safety. If they are not removed or replaced in a timely manner they may result in future fill failures.

Bridges are a significant portion of the built environment within the Umpqua National Forest, with over 140 bridges on NFS roads. The cost of routine maintenance for bridges is included in Table 2 as part of the road system cost/mile. More substantial deferred maintenance costs for repair and reconstruction of bridges are not included. Currently the Forest has several bridges that are signed or closed due to structural deficiencies limiting the weights they can support. These range from the closed Cottage Bridge near Toketee that will support less than 4,000 pounds, to Mott Bridge near the confluence of Steamboat Creek and the North Umpqua River that is limited to the state recognized maximum weight limit for non-overload permitted commercial trucks. There are several other bridges on all four ranger districts that have similar issues and are weight restricted or closed to protect the public and structures. With more than sixty percent of the bridges on the Umpqua National Forest more than fifty years old, bridges will continue to require repair and maintenance with limited funding, and more closures and load restrictions can be expected.

Existing Direction and Guidance for Roads

Direction for management of Forest Service road systems is contained in Forest Service Manual 7700 – Travel Management, Forest Service Handbook 7709.55 – Travel Planning Handbook, and Forest Service Handbook 7709.59 – Road System Operations and Maintenance Handbook.

Numerous roads analyses have been conducted at various scales on the Umpqua National Forest. In 2003, the forestwide Umpqua Roads Analysis Report compiled information useful for making informed decisions about road management. It had three primary objectives. The first objective was to determine the key road system (the primary and secondary road system), and to validate this concept as a tool for making decisions about road management. Second, to capture the accumulated information gained from public involvement and compiling Ranger District input in order to better inform land managers about the benefits and liabilities of roads, indicate some areas needing improvement in road management, ways to mitigate risks, and sources of additional information. Third, to provide guidance for watershed scale and project scale roads analysis.

Numerous roads analyses at scales smaller than the Forest have been previously completed in conjunction with watershed analyses conducted in accordance with the NWFP. These analyses should be reviewed and their results and recommendations considered in project level planning in the same areas. A table of all previous existing approved decisions for system road decommissioning or inactivation is included in Appendix G. Previous decisions that are aged more than 5 years will receive an appropriate review by line officers to assure they are still appropriate. No changes to the roadway will be taken until review is completed.

Road Stabilization, AOP, Decommissioning, Inactivation Implementations

Past NEPA decisions over the last twenty years include inactivation of ML 2 roads. Inactivation puts the roads into storage by removing culverts, installing water bars and blocking the entrance to prevent use by motorized vehicles. When the road is needed and used again for project activities, stream crossings will be reestablished and may include the use of temporary bridges, used only for the duration of the project. Inactivation allows the road prism to remain in place for future use. The road is then classified as ML 1 during these interim periods it is not needed. Inactivation allows for road treatments such as removal of culverts and fill material from stream crossings Approximately 50 miles of inactivation has been implemented in the last twenty years. Approximately 45 miles have not been implemented from past decisions that may be implemented in the foreseeable future. Inactivation to date has typically left culverts, including culverts in stream crossings. Future inactivation of roads may include work to remove culverts and road fill from stream crossing locations based on the risk of future structure failure. If there are stream crossings that need to be removed as part of the inactivation, the road would not likely be passable with standard vehicles during the inactivation period without replacing stream crossings with some type of structure. Inactivation of a road system is always evaluated against the risk of needed access for fire management and other resource and recreation needs during the inactivation period.

Past NEPA decisions to decommission roads over approximately twenty years have reduced the total mileage of NFS roads on the Umpqua National Forest. In this time period, approximately 177 miles of road have been decommissioned. Approximately 95 of those miles have been ML 2 roads and the other 82 miles have been ML 1 roads. Past decisions also include approximately 58 miles of road decommissioning not implemented to date (see Appendix G), some of which may be implemented in the foreseeable future, further reducing total road mileage. Approximately 19 of those miles are ML 1 roads, approximately 38 miles ML 2, and less than one mile of ML 4. Decommissioning is intended to remove or significantly reduce resource risks associated with a road, and results in permanent closure of the road and removal from the maintained road system. Decommissioning describes termination of the function of a road and mitigation of any adverse impacts to forest resources in the process. Road decommissioning is planned to restore water routing, improve slope stability, reduce sediment delivery to streams, and enhance reestablishment of native vegetation. Activities range from blocking the entrance, scattering woody debris on the roadbed, revegetating, and water barring to deep ripping, removing fills and culverts, reestablishing stream channels, pulling back unstable road shoulders, and recontouring slopes for full obliteration. Specific treatment prescriptions for individual roads are fully developed after completion of thorough field assessments and significant public input during the planning process. Over the same period of approximately twenty years, hundreds of miles of road have been reconstructed to stabilize road slopes and surfaces, replace deteriorated and undersized culverts, and improve passage for aquatic organisms (both fish and other species). The road stabilization and culvert replacement work is planned and designed to reduce risk of damage to roads resulting from storm damage and to reduce associated environmental risk. The work also results in reduced recurring maintenance needs and costs.

Costs for the above activities vary with the characteristics of the individual roads. With both decommissioning and reconstruction of roads, work at stream crossings is usually the most expensive work component, and that varies with the depth of road fill at the crossing. During decommissioning, excavation removes the culvert and restores the stream channel to a stable width and with appropriately sloped banks. Costs vary from $1,000 for shallow fills in small streams to $25,000 or more for deeper fills and larger streams. When reconstructing a road with deteriorated or undersized culverts, the cost for stream crossing culvert replacements generally range from $2,500 to $100,000. Establishing new aquatic organism passage structure may range from $50,000 to $250,000, depending greatly on stream width and depth of fill. Average total cost ranges per mile of road for decommissioning are approximately $5,000 to $45,000. Inactivation costs per mile (without removing culverts) range from $1,000 to $5,000. Reconstruction costs range widely, typically from $20,000 to $75,000 per mile, though some road segments with substantial slope stabilization and stream crossing needs may cost several hundred thousand dollars/mile.

Step 3: Identifying Issues and Key Questions

Public input helped form the issues and transportation needs represented in this report. Sources include a variety of comments from individual planning processes and specifically the development of the draft MVUM. Significant public input was received during public meetings held in late 2014 where draft maps and information on this process was shared with the public. In this process we identified issues, routes and activities that where important to the public regarding road management on the Umpqua. Previously completed and documented roads analyses also provide issues and key questions that are still valid for this TAP. The interdisciplinary team consists of experienced planning specialists familiar with many road related issues and assessment factors that have been addressed in numerous prior planning projects. All these information sources were essential in identifying issues and key questions for the TAP.

The following comments and suggestions indicate the array of public input received during this and prior planning projects:

- Roads should be kept open and maintained to provide access for fire suppression activities
- Shorter spurs off main roads should be closed to avoid maintenance costs until the roads are needed again
- All type of road experiences are important to motorized users, we do not want to use just paved roads.
- Quiet recreation can be compromised when road density is too high
- New road construction should be avoided
- An extensive road system was originally built with timber sales at significant expense in credits to timber purchasers rather than allowing money to go to the United States Treasury and state and county government, with the expectation that roads were a long term investment and commitment
- Every road has a reason for being there and it should remain, as it we built at great cost and is an asset to the people and the Forest
- Concern expressed regarding short term erosion and sediment associated with road decommissioning, stream crossing culvert replacements, road maintenance and timber harvest activities
- Roads analysis should include an assessment of road densities

- Economic costs of stabilizing, closing or decommissioning roads needs to be weighed against the costs of maintaining a road and keeping it open
- Access to private lands should not be compromised
- Concern over loss of access for hunting and other dispersed recreation activities
- Timber harvest activities should be more greatly utilized to fund repair and maintenance of roads

The following issues are listed by category with a general description and associated key question. Refer to Step 4 and Appendix B for more detailed descriptions and breakdown of how these issues are broken down into subcategories and rating factors. These items were significantly informed and shaped by the above public input received as well as from knowledge of the ID Team and the requirements of this Subpart A TAP.

Beneficial Uses

Administrative Uses: The road system provides administrative access for operation and maintenance of facilities and roads, research and monitoring. Which roads are the most important to maintain for these uses?

Fire and Fuels: The road system provides access for purposes of strategic fire suppression, conducting fuels management activities, accessing water sources, helispots, lookout, and advantage points. Which roads are the most important to maintain for these uses?

Access for Private Lands within the Forest: The road system is used for access to private and industrial timberlands within the forest boundary and for their management and fire protection services. Maintaining this assess is essential where there is no other suitable access available.

Forest Public Access: The road system provides access for recreation activities. Which roads are the most important to maintain for these uses?

Management Products: The road system is used for forest management activities and removal of commercial forest products. Which roads are most important to maintain for these purposes?

Heritage Resources: The road system provides access for long term traditional uses by tribal groups. This would include activities such as hunting, berry picking, and gathering of traditional products/items and for access to traditional meeting sites. These roads also provide access for educational and interpretative sites for the heritage program.

Transportation Links: The road system facilitates efficient movement of people, equipment and materials between areas on different scales.

Environmental Risks

Heritage Resources: Some roads or road segments roads have continued access conflicts with the needs of the heritage program on the Forest.

Wildlife: Roads and road traffic negatively affect habitat for some wildlife species, including late successional values associated with late successional reserve objectives, northern spotted owl, peregrine falcon and big game winter range.

Aquatics: Roads can affect aquatic habitat and water quality by impacting riparian areas, altering flow regimes of streams, delivering sediment to streams from road surfaces, by failure of stream crossings, and by stream crossings that affect stream morphology or aquatic organism connectivity.

Unique Habitats: Roads located in unique habitats negatively affect those habitats.

Road Maintenance Costs and Funding

Many of the roads on the Umpqua National Forest are not maintained on a regular basis. Intervals for needed maintenance are based on a multitude of factors and the funding available each year. They include the need to maintain routes in a safe and environmentally effective manner for roads with high traffic volume, this is needed to assure the safety of the public and provide access to high use areas of the Forest. Some are not maintained as they have very low traffic volume and travel speeds is low based on the road geometry surface conditions so the risk of accidents is low. Roads are periodically inventoried to check for needed repairs to prevent environmental damage. Reports of road damage are collectively gathered by district personnel and the recreating public. If issues are found the road is reviewed by specialists and it is prioritized for maintenance and repair based on urgency. Some roads are not used and have become impassable by motorized vehicles due to vegetation, downed timber, rocks, slides and other naturally caused damage. Some roads are located such that they are nearly self-maintaining and have little chance of causing environmental damage, and they receive only periodic maintenance, generally associated with project work in the area. The current system of roads requires more maintenance than is economically available at this point. There are options for decreasing the need for annual and reoccurring maintenance and making the roads more self-sufficient based on the type of drainage systems and structures on the roads. This can significantly decrease the risks to the environment from the road system and decrease the overall need for annual maintenance significantly. What opportunities are there to change the road system management strategy to better balance maintenance need with funding while maintaining the most important roads for access and resource protection?

Step 4: Assessing Benefits, Problems and Risks

The Analysis Process

Rating factors were developed to answer the key questions identified in Step 3 for beneficial use (eleven factors) and environmental risk (seventeen factors). The approximate 4736 miles of road included in the analysis were segmented in GIS to allow for meaningful scoring. 6514 road segments were analyzed. Segment lengths range from less than 0.1 mile to 11.6 miles, with a median length of 4.4 miles.

Some of the factor scores are derived from combinations of data from different sources and others are a simple representation of one source. Factors have different individual score ranges as described below. All factor scores were normalized to form a range of zero to one. They were then were multiplied by a weighting factor. The interdisciplinary team worked together to establish weighting factors, recognizing some factors are considered more important than others in developing recommendations for road management.

Categories of weighted beneficial factor scores and weighted environmental risk scores are combined and total benefit and risk scores established for each road segment. The results are displayed in Figure 1 as a scatter chart with a data point for each road segment plotted with benefit score on the vertical axis and risk score on the horizontal axis. Focusing road treatments that affect access inactivation, lowering maintenance levels, or decommissioning on road segments with relatively higher risk scores and relatively low benefit scores. This can gain greater reduction in risk with less loss of access for the public at large. Each set of road segment data includes current estimate maintenance costs, so possible cost reductions resulting from road treatments can be summarized for different scenarios of changes in road management.

Factors and Scoring Criteria

Rating factors below are described with general summaries of each factor and their range of possible scores. Refer to Appendix B for detailed description of the criteria used to determine individual factor scores.

Beneficial Use Factors

Administrative Uses:

"au1"is a number ranging from 0 to 3, describing the road segment's value in providing important access to research areas, monitoring sites, rock and stone building quarries, administrative building sites or other agency administrative facilities.

Fire and Fuels:

"fifu1"is a number ranging from 0 to 3, describing the road segment's value in providing access and strategic use by fire management personnel to respond to and manage wildland fires.

"fifu2"is a number ranging from 0 to 3, describing the road segment's value in providing current and future access and strategic use for fuels management activities.

"fifu3"is a number ranging from 0 to 1, describing the road segment's value in providing access to strategic water sources, helispots, lookout/vantage points, and other points useful in fire management.

"fifu4"is a number ranging from 0 to 2, describing the road segment's value in providing agency access to Wildland Urban Interface areas or Borderlands adjacent to private timberlands where initial response to minimize fire size is a priority. Potential usefulness as primary or secondary evacuation routes leading away from areas with high visitor use.

Forest Management Products: Refer to Appendix C for more detailed description of the scoring criteria for these factors.

"fmp1"is a number ranging from 0 to 4, reflecting the minimum anticipated use of a road segment for forest management activities, including logging systems and log haul, within the next five years. Measurement: active timber sale or anticipated sale from current NEPA projects.

"fmp2"is a number ranging from 0 to 4, reflecting the minimum anticipated use of a road segment for forest management activities, including logging systems and log haul, within the next 20 years. Measurement: volume/road segment

"fmp3"is a number ranging from 0.5 to 3, reflecting the minimum anticipated use of a road segment for forest management activities, including logging systems and log haul, within 21-50 years. Measurement: volume/road segment

"fmp4"is a number ranging from 0 to 1, reflecting the value of the road segment in providing access for utilization of special forest products. Measurement: road currently providing access to a variety of special forest products.

Heritage Resources:

"hr1"is a number ranging from 0 to 3, describing the road segment's value in providing access for long term traditional uses by tribal groups.

Public Access:

"pa1"is a number ranging from 0 to 5, reflecting the importance of a road segment for providing direct access to developed campgrounds, trailheads and other recreation sites.

"pa2"is a number ranging from 0 to 5, reflecting the importance of a road segment for providing access to inventoried dispersed campsites. Data is from employee knowledge and from inventories conducted in the 2011-2013 field seasons to locate and map dispersed campsites across the Forest.

"pa3"is a number ranging from 0 to 3, reflecting the importance of a road segment for providing non-camping road related recreation including driving recreation, hunting access, scenic drives, and wildlife viewing.

Special Uses:

"su1"is a number ranging from 0 to 5, reflecting the importance of a road segment for providing access to privately owned lands or long term authorized use areas such as utility corridors, mining claims, grazing allotments, summer homes, commercial communication sites, or where access is ancillary to other special uses authorizations.

Transportation System Links: The road system facilitates efficient movement of people, equipment and materials between areas on different scales.

"ts1"is a number ranging from 0 to 3, reflecting the importance of a route for providing important connectivity between off-Forest towns and communities or between public highways.

"ts2"is a number ranging from 0 to 2, reflecting the importance of a route for providing important connectivity between fifth-field watersheds

"ts3"is a number ranging from 0 to 1, reflecting the importance of a route for providing important connectivity between sixth-field subwatersheds

Environmental Risk Factors

Heritage Resources:

"hrr"is a number ranging from 0 to 3, identifying road segments where continued access conflicts with the needs of the heritage program on the Umpqua National Forest.

Wildlife:

"lsr"is a number ranging from 0 to 9 that addresses the role of each road segment in the context of fragmenting late successional habitat within late successional reserve (LSR) management areas.

"nsochu"is a number ranging from 0 to 9 that addresses the role of each road segment in the context of fragmenting critical habitat for the northern spotted owl.

"tesw"is a number ranging from 0 to 9 that focuses on disturbance to the northern spotted owl.

"wr"is a number ranging from 0 to 6 that addresses the role of each road segment in the context of fragmenting critical habitat for the northern spotted owl.

Aquatics:

"rdsed" is a number ranging from 0 to 3 that addresses road prism sediment yield hazard. Refer to Appendix D for more detailed description of the scoring criteria for this factor.

"rr"is a number ranging from 0 to 6 that addresses roads that occupy riparian reserves and have potential for affecting aquatic biota and water quality. Refer to Appendix E for more detailed description of the scoring criteria for this factor.

"sx1"is a number ranging from 0 to 5 that addresses roads with potential for sediment delivery to streams associated with mass wasting and risk of stream crossing failures (road washouts). Refer to Appendix D for more detailed description of the scoring criteria for this factor.

"sx2"is a number ranging from 0 to 8 that addresses roads with potential for negatively affecting stream morphology, aquatic biota and aquatic organism connectivity at stream crossings. Refer to Appendix E for more detailed description of the scoring criteria for this factor.

Unique Habitat:

"unique1" is a number ranging from 0 to 1 that identifies road segments that are located in known, mapped wetlands.

"unique2" is a number ranging from 0 to 1 that identifies road segments that are located in mapped non-forested lands. Factor Weights and Score Compilation

The individual factor scores for each road segment are added to create separate total scores for beneficial use and environmental risk. Prior to this in the calculations, two steps occur: first each factor score is divided by the maximum possible score for that factor to normalize all segment scores for that factor to a scale of zero to one; then the normalized score is multiplied by a weighting number established for that factor. For example:

> A score of "3" for su1 would be divided by 5, the maximum possible score for su1. The result of 0.60 would be multiplied by 8.7, the weighting number for su1, resulting in a normalized, weighted score of 5.22.

The interdisciplinary team established relative weights for all factors. This was done with a pairwise correlation matrix process in which each team member established relative ranking among the beneficial factors and separately among the environmental risk factors. The results from team members were then combined and averaged to produce the final weights. Factor weights are listed in Table 3. It is important to note that benefit scores and environmental risk scores are not designed or intended to be compared or combined with each other. The ranges of scores and weighting factors are not the same for benefits and environmental risks. Scores and weighting factors are relative to each other only within each of the two groups. Nonetheless, Table 3 includes an adjusted zero to on-hundred scale to display benefit and risk weighting factors similarly.

Table 3 - Rating Factors and Weight Factors

Benefit Factor		Weighting Factor			Environmental Risk Factor		Weighting Factor	
Code	**Factor Description**	**Weight**	**0 - 100 Scale**		**Code**	**Factor Description**	**Weight**	**0 - 100 Scale**
au1	administrative sites	10.89	100		unique1	wetlands	17.22	100
ts1	cross forest connectivity	9.41	86		hrr	heritage resources	13.15	76
su1	special uses	8.71	80		sx1	stream crossing hazard	12.24	71
fmp1	forest products 0-5 years	8.53	78		rdsed	road prism sediment	10.45	61
pa1	developed recreation	8.43	77		tesw	northern spotted owl disturbance	10.15	59
fifu1	fire management	6.48	59		nsochu	northern spotted owl critical habitat	7.83	46
fifu4	WUI, border land, exits	6.19	57		rr	riparian reserves	7.17	42
ts2	watershed connectivity	6.13	56		sx2	stream crossing effects	7.09	41
hr1	heritage resources	5.67	52		unique2	non-forested lands	5.30	31
fifu2	fuels management	4.94	45		lsr	late successional reserves	5.07	29
fmp2	forest products 5-20 years	4.87	45		wr	big game winter range	4.69	27
fifu3	sumps, helispots, vantage points	4.53	42					
ts3	subwatershed connectivity	3.57	33					
pa2	dispersed camp sites	3.57	33					
fmp4	special forest products	2.95	27					
fmp3	forest products 20-50 years	2.60	24					
pa3	dispersed recreation	2.52	23					

Assessing Results

The individual total benefit and environmental risk scores for each of the 6514 road segments are plotted as a scatter chart in Figure 1. Benefit scores range from 0.44 to 77.34. Risk scores range

from to zero to 68.96. The midpoint of segment scores based on mileage, (benefit score 25.75, risk score 22.29) is marked on the chart. One-half of the total road mileage has benefit scores greater than this point, and one-half of the total road mileage has risk scores greater than this point. The three lines added to the chart, "Line 1", "Line 2", and "Benefit Score = 1", are described in Step 5.

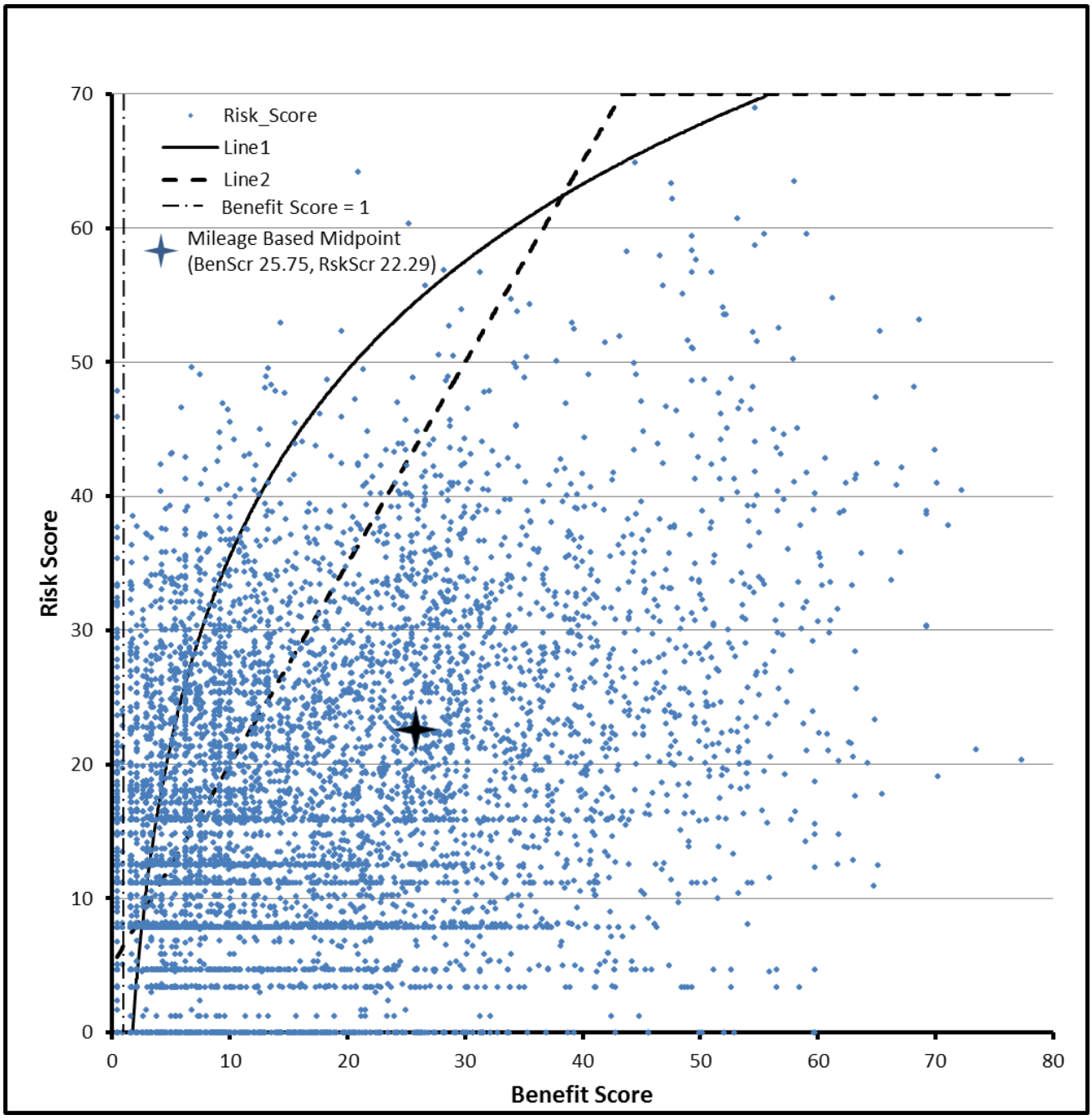

Figure 1 – Road Segment Benefit and Risk Score Chart

Figures 2 and 3 show the distribution of road mileage across the score ranges of benefit and environmental risk, respectively. Sixteen percent (752 miles) of the roads are scored within the

highest forty percent of the benefit score range. Eight percent (360 miles) of the roads are scored within the highest forty percent of the environmental risk score range.

Further analysis shows that thirty-seven percent ($1,766,000) of the annual needed maintenance cost is associated with the highest forty percent of the benefit score range. Fifteen percent ($734,000) of the annual needed maintenance cost is associated with the highest forty percent of the environmental risk score range.

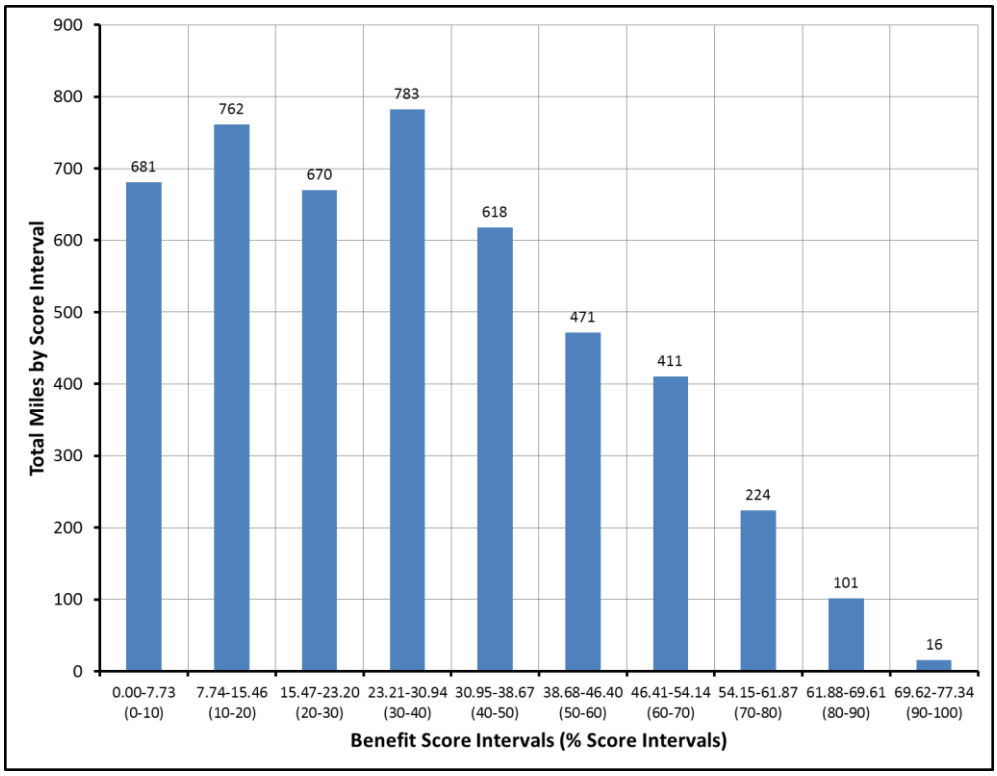

Figure 2 – Mileage Distribution of Benefit Scores

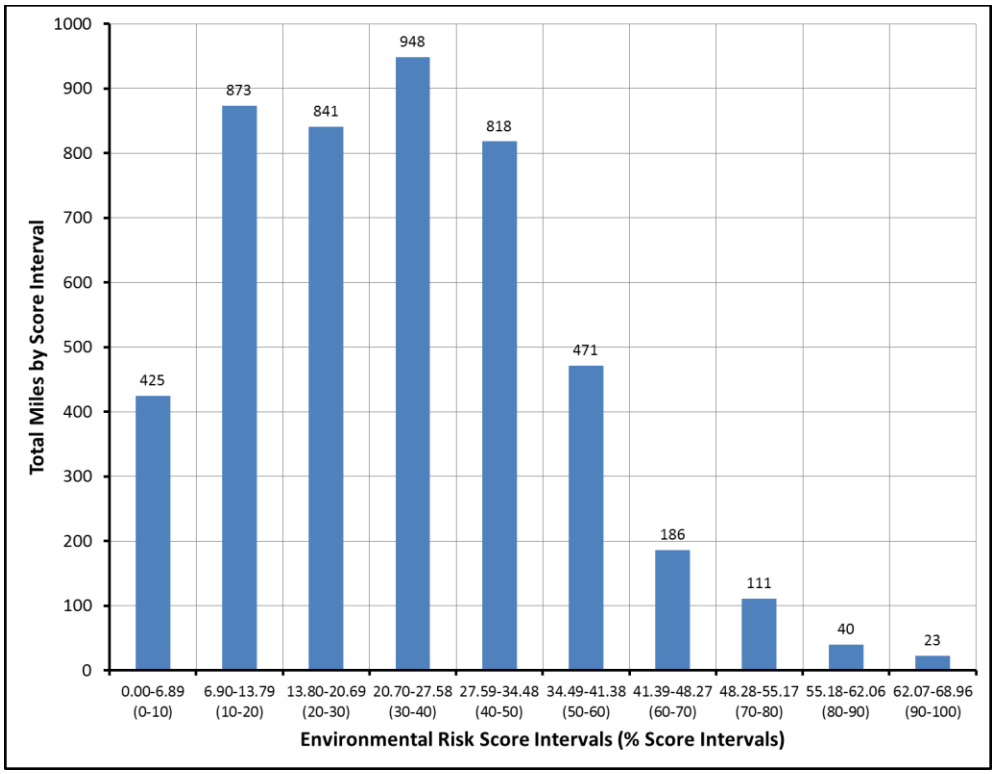

Figure 3 – Mileage Distribution of Environmental Risk Scores

Thirty miles of road located on private land within or near the boundaries of the Umpqua National Forest, but without federally acquired right-of-way, were included in the analysis to assess the potential opportunities for needed right-of-way acquisition or transfer of property. Twenty-three miles of private road have benefit scores within the highest eighty percent of the benefit score range, and seven miles were identified as possibly being needed for removal of forest management products five to fifty years in the future. Other beneficial uses identified include fire and fuels management and heritage resources.

Access to private inholdings, where there is not feasible access their land without crossing federal land, will continue to be a priority for the Forest so we can find the most feasible access with the least resource impacts. The most feasible access will be evaluated on a case-by-case basis when a landowner approaches the Forest. Roads, if needed for access to private inholdings, would require the appropriate level of NEPA review prior to construction. The route may or may not be needed for Forest Service access. It is likely future responsibility for maintenance would rest with private land owner and not be the responsibility of the Agency. In either case roads currently on the system were evaluated during this process to value the likelihood of private land access needs now and in the future. This was captured in the "su1" criterion.

Approximately 48 miles of existing roads have a benefit score of less than one point. No road segments have a benefit score of zero points. Those with a benefit score less than one are either: those with no access benefits assigned other than for no or only low volumes of forest management products removal in the future 20 to 50 year range; or those ML 1 roads with no access benefits assigned other than collocation with designated trails open to all vehicle classes. Of the 48 miles, less than one mile is ML 2, the remainder is ML 1.

Step 5: Describing Opportunities and Priorities

Sustainable Road System

All NFS roads on the Umpqua National Forest have been identified as having potential beneficial use for accessing National Forest Lands. Recognizing seven categories of beneficial use or access (administrative, fire and fuels, forest management products, heritage resources, public access, special uses, and transportation links) results in all but perhaps 48 miles (one-percent) of 4706 miles that are considered to be likely needed for safe and efficient travel and for administration, utilization, and protection of National Forest System (NFS) lands as described in 36 CFR 212.5(b)(1). However as currently managed, this road system does not reflect long term funding expectations, and without change in road management strategy the condition of many roads will continue to degrade. This will lead to loss of access on some roads due to natural occurring road blockages. In some cases it may cause negative impacts to resources. Opportunities should be explored during all project level planning exercises to reduce overall road maintenance costs and environmental risks.

Line 1 and Line 2 on Figure 1 can be used as examples to focus road maintenance strategy changes on those roads with lower beneficial use and higher environmental risk. By substantially reducing or eliminating road maintenance needs for segments to the left of or above the line(s), relatively more risk may be addressed with lesser impact to access and beneficial use. Road inactivation or decommissioning brings maintenance needs and costs to nearly zero, while other treatments can significantly reduce maintenance need without the loss of continued access. Each road will need to be reviewed during future localized planning efforts to inform the line officer and allow them to choose the most advantageous treatment. It is not possible in this forest level report to have accurate data on individual road segments in most cases, the scale is too large and the amount of data would be overwhelming. It is an initial review and will be useful in informing future efforts at the project level.

If all road segments to the left of or above Line 1 (312 miles) were treated to bring maintenance needs and costs to zero, overall annual road costs would be reduced by about one-percent ($45,000). This small change corresponds with the fact that most of the affected road segments are ML 1 roads (249 miles) that currently have no maintenance cost. If all road segments to the left of and above Line 2 and/or Line 1 were treated (340 ML 1 miles and 314 ML 2 miles), overall annual road costs would be reduced by about five percent or about $225,000. These hypothetical changes would not bring needed road maintenance costs near to long term funding expectations. In reference to Figure 1 it can be seen that meeting this cost balance objective is not likely to occur without change affecting a much greater proportion of higher beneficial use and access roads.

Financial Analysis Results

The scale of maintenance cost reductions needed to align a future road system with available funding is too large and the specific roads and treatments needed to achieve those reductions too complex for this TAP to identify a definitive set of recommendations to achieve that objective directly. However, regional guidance for the TAP process requires that we show at least one option of the size and composition of a road system where average annual maintenance costs are generally in balance with average annual funding. In order to achieve that goal substantial changes would need to be made the current road system in terms of the existing maintenance standards and frequency and intensity of work performed on the roads. One hypothetical scenario of a “balanced” road system is shown in Table 3.

Table 3 – Scenario of a road system where average annual road maintenance costs is approximately in balance with average annual maintenance funding.

Maintenance Level	Road Maintenance Category	$/mi	Miles	Total
5	Primary – Double Lane Asphalt	$5,177	38	$196,730
	Primary – Single Lane Asphalt	$3,782		
	Primary - Aggregate	$2,282		
ML 5 Subtotal:			***38***	***$196,730***
4	Primary – Double Lane Asphalt	$5,177		
	Primary – Single Lane Asphalt	$3,782		
	Primary - Aggregate	$2,282	57	$130,102
ML 4 Subtotal:			***57***	***$130,102***
3	Primary – Double Lane Asphalt	$5,177		
	Primary – Single Lane Asphalt	$3,782		
	Primary - Aggregate & Native	$1,611	200	$322,282
ML 3 Subtotal:			***200***	***$322,282***
2	Secondary – All Surface Types	$659	1,262	$832,124
	Other Roads	$367		
ML 2 Subtotal:			***1,262***	***$832,124***
1	Other Roads	$1	3,101	$2,140
ML 1 Subtotal:			***3,101***	***$2,140***
	Totals:		**4,658**	**$1,483,378**

To achieve a scenario like this, substantial changes would need to be made to the existing road system described earlier in Table 2 of this document. This scenario would retain the same number of miles of the Primary and Secondary road system described earlier but the standards of roads and maintenance frequency on them would be greatly reduced. For example, the number of miles of roads maintained for passenger cars would be reduced from 514 miles to 295 miles, (about 5%). Many of these roads would need to be converted from a paved surface to a gravel surface over the long run. The number of miles of secondary roads would increase due to the reduction of the primary passenger car roads. Maintenance standards and frequency of maintenance work would need to be reduced. The remaining "other" roads would not receive any further maintenance from appropriated funds and would eventually need to be moved into the intermittent service category (ML 1) and put in storage for future project uses. The 48 miles of roads identified in this TAP as being likely not needed for future management objectives would be removed from the system. The combination of these actions would reduce total annual maintenance costs to $1,484,000, which would fall within 20% of the existing average annual road maintenance funding of $1,320,000, and thus would meet the Region 6 criteria. A comparison between the existing road system and this scenario is shown in Figure 4.

OPML	Current Road System				Scenario 1		
	Miles	% of sys	Cost		Miles	% of sys	Cost
5	41	1%	$242,978		38	1%	$196,730
4	131	3%	$687,563		57	1%	$130,102
3	342	7%	$872,320		200	4%	$322,282
2	3,300	70%	$2,960,213		1,262	27%	$832,124
1	892	19%	$738		3,101	67%	$2,140
	4,706	**100%**	**$4,763,812**		**4,658**	**100%**	**$1,483,378**

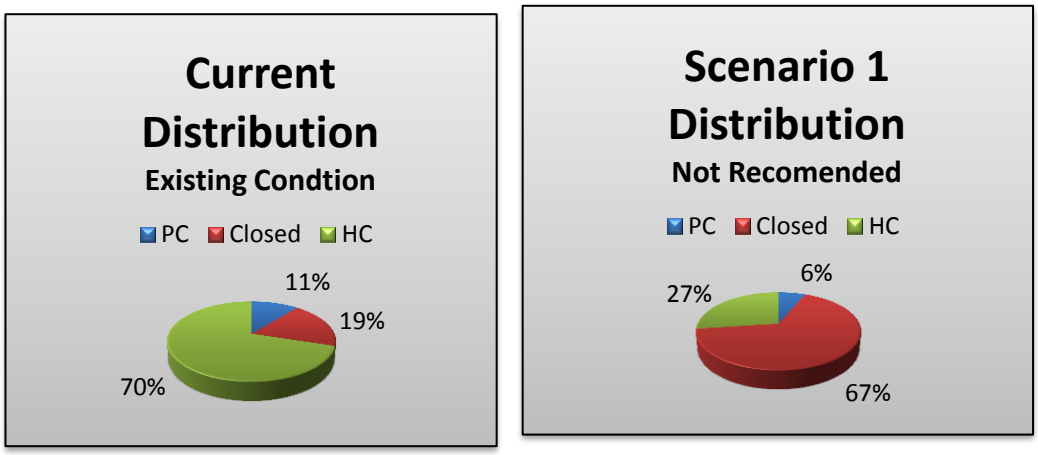

Figure 4 – Mileage Distribution Between Existing Road System and Scenario 1

The example above is just one scenario intended to show the type and scale of changes that would be necessary to bring the current road system in alignment with current funding. **Scenario 1 is not a "recommended" solution to the financial shortfall detailed in this report.** Many other scenarios for changing the size and composition of the road system are also possible. The potential losses of access and ability to allow for administration, utilization, and protection of National Forest System (NFS) lands, combined with the substantial real costs in implementing the scale of changes needed are not feasible at this time and are not recommended or feasible. Nonetheless, actions should be taken when opportunities arise to help address the array of issues identified in this TAP. Conversely, not all road damage or deteriorated conditions need to be repaired or improved. There may be opportunities to essentially discontinue actions to maintain roads that have become inaccessible or nearly so. Consideration needs to be given to comparative environmental risks associated with action versus no action.

Recommendations and Priorities

Project level planning will be used to identify specific opportunities to bring the Umpqua National Forest closer to a road management strategy that emphasizes reduced environmental risk with a road system that is more aligned with long term funding. This may include reduced service levels on roads, road inactivation and storage and some decommissioning that result will result in reductions of continuous access on some road systems. Future integrated restoration projects will include the personnel with the knowledge and experience to recognize transportation system concerns, issues and opportunities within watersheds and subwatersheds. Site specific treatments will be proposed and assessed after careful field assessment and consideration of both short and long term future access needs. Watershed restoration action plans and vegetation management projects in the preliminary planning phase may be used to identify road treatment opportunities followed by environmental analysis to consider the long term affects. The road system within each planning area should be comprehensively addressed to identify a desired condition with both reduced environmental risk and reduced maintenance needs. **Continued public engagement and involvement is essential to ensure recognition of roads important for recreational purposes and traditional uses. Continued engagement with the public at each future project level planning effort is essential to understand all the desires of the public for both motorized and non-motorized uses taking place on the road system in specific locations.** While significant input was received in the development of the draft MVUM, before recommendations in this report are implemented on any road system,

more engagement is needed with the public, interest groups, State, industrial land owners, BLM, DFPA and others with vested interest in the roads on the Umpqua.

- Priority subwatersheds identified in the Watershed Condition Framework should be the highest priority areas for investing in road related work to reduce risk associated with habitat and water quality.
- Look to implement projects recommended in Watershed Action Plans that reduce negative effects from roads and reduce road maintenance needs.
- When possible change the road drainage systems so that they do not rely on culverts and ditches, use systems that don't unnaturally concentrate water and need routine maintenance.
- Forty-eight miles of road are likely not needed to meet forest resource management objectives as described in 36 CFR 212.5(b)(2). Less than one mile is ML 2 and the remainder is ML 1. These roads are shown in Appendix F.
- An additional 58 miles of roads have already been identified for decommissioning (See Appendix G). These 58 miles are not identified on the likely unneeded roads list in this report as they need the appropriate level of NEPA sufficiency completed by a line officer before any decommissioning is completed. All these roads should be inspected for conditions and concerns that may be mitigated with treatment, reassessed for possible future access needs, and then considered for inactivation or decommissioning if they are not needed for access in the foreseeable future.
- ML 2 roads planned and used for timber sale activities should be assessed to determine when the road will be needed again. Roads that are likely not needed for periods of twenty years should be converted to prisms that are less maintenance intensive or can be put into storage as an ML1 road to eliminate all maintenance needs.
- Deteriorated culverts in stream crossings on ML 1 roads can be removed and not replaced until needed. When needed in the future they can be utilized again with a temporary bridge that can be relocated as needed to different locations and removed again at the end of the project.
- In timber sale planning, integrate road treatment options to maximize restorative and cost reducing changes to the roads system. Utilize Knudtsen Vandenburg collections to the extent feasible to fund road treatments.
- Explore fire prevention and fuels funding options for roads where the beneficial uses are primarily related to fire and fuels management.
- On roads that must be maintained for access, treatments other than road inactivation and decommissioning that reduce maintenance needs include stabilization of roads by converting ditched and crowned road prisms to out sloped or cross ditched (water barred) roads that better disperse slope and road surface water runoff without reliance on maintained ditches and ditch relief culverts. These treatments can be designed to allow continued use by high-clearance vehicles, but work best on very low traffic volume roads. The cross ditches and outslope should be constructed for durability so little follow up maintenance is needed
- Advance efforts with private land owners to establish road maintenance agreements to commensurately share in road maintenance costs on jointly used roads not currently under agreement.
- During project planning, assess existing unauthorized roads within the planning area and determine if there are opportunities to reduce environmental risk associated with the road, add the road to the system, find a third party that needs the access and will take maintenance responsibility under various authorizations or eliminate the road during the management action.

In addition, consider reducing maintenance costs on some secondary roads by converting them to outsloped road prisms that do not require blading and have reduced drainage maintenance needs. Consider and assess these opportunities during project planning. Among secondary roads, some have historically been lower priority for maintenance and may not have adequately functioning drainage as a result. They include 1613, 2500-425, 2500-480, 2715-530, 2715-900, 2719-617, 2792-100, 2792-817, 2801, 2823-500, 2980-400, 3700-100, 3809, 3821 (within Canton Creek), 4711-600, 4711-630, 4711-750, 4720, and 4720-005, which together total approximately 84 miles. This list of roads is going to be evaluated for storm proofing measures over the next two years to reduce environmental risk. This will be accomplished by making site visits and having line officers involved in the process of determining what treatments can best accomplish risk reduction and maintain the needed access.

One road segment that is not identified as a secondary road, but should be, is the eastern 6.5 miles of 2759. This road provides an important link between subwatersheds and has high benefit factor ratings, including forest management products, and fire and fuels management. It should be considered for change in service level and potential improvements to reduce risks, as it is needed for the transportation system well into the future.

There are approximately 200 miles of asphalt paved roads. While routine maintenance costs are similar to those of a routinely bladed aggregate road, the deferred maintenance cost of reconstructing or replacing a deteriorated asphalt surface can be very substantial. A new overlay on a single lane, asphalt surface road costs upward of $150,000 per mile, and can be much greater if the underlying base requires reconstruction or stabilization. It is likely that over future years, the mileage of asphalt paved roads will decline due to this economic consideration. Integrated project planning should consider options to long term continuance of asphalt surfaces, including grinding asphalt to convert to aggregate surfaces. Some asphalt roads have already been recognized as very low priority for maintaining asphalt surfaces, and are being allowed to deteriorate without expending funds on patching of crack filling. Examples are the paved segments of roads 3816, 3818, 3230, 4713-100 and 4775 which together total approximately sixteen miles.

The Umpqua National Forest road system of more than 4700 miles was constructed and developed over a period of nearly a century and has been used for a multitude of activities. Land and resource management needs and priorities shift with time and the changes vary geographically across the landscape. An adaptive road management strategy that shifts with these changes is needed to move toward a more sustainable road system. Sustainability should be measured by reduced need for recurring maintenance, decreased critical deferred maintenance, and that continues to address and respond to changing social, ecological and environmental issues. It is expected that changing the transportation system on the Umpqua to a sustainable system will be a process that will take decades and the definition of sustainable will be dynamic over time. That being said changes and recommendations in the system that are suggested in this report should be considered whenever there are opportunities to migrate the system to a more sustainable state. A sustainable system needs to require fewer maintenance cycles/actions per mile than the current system, be economically viable (maintenance input available = maintenance need), be resilient with respect to natural events that could cause environmental damage, and provide the needed access for management and enjoyment of the Forest by the public for both motorized recreation and access to quiet recreation sites at trailheads.

Step 6: Reporting

The 2015 Forestwide Umpqua National Forest TAP is documented in this report, appendices, and maps, which are available online at the Umpqua National Forest website:

http://www.fs.usda.gov/main/umpqua/home